Test Phas	se Purpose	Us	sers	Tes Reviev		Decision to Continue Project
Alpha	Assess progress and set course correction.	urse and "friendly" Leader		tfolio er's	НРСМР	
	Alpha Test and Evaluation Overview					
Purpose	How		Whe			ected Outcome
Ensure DoD relevance.	Examine the test plan against project's approved CTPs. Ens systems and cases/data plann testing actually test the CTPs. test plan and cases/data as ne Obtain approval for the revision SAS PM.	ed for Refine ecessary.	Prior to the Alpevent.	bha test	project's C	s that match the TPs and goals.
Determine the performance of the code.	Test the code against the Alph CTPs.	a-level	At the test eve	ent.	performandaccordance	measurable ce improvement in e with Alpha-level icidation of problems nesses in the code.
Obtain user feedback about the usefulness of the code.	<ol> <li>Obtain user feedback concerequirements vis-a-vis the code and planned performance.</li> <li>Propose modifications to the appropriate.</li> </ol>	e's current	Alpha review.	ng the est report	Updated re	equirements analysis.
Evaluate and refine the detailed technical approach.	<ol> <li>Verify the code's readiness development.</li> <li>Review the software developlan (SDP) technical approach</li> <li>Propose modifications to the appropriate. Obtain approval of PM.</li> </ol>	opment n. e SDP as	1 At the test end 2 At or after the event 3 Within the televaluation repthe Alpha review.	e test est report, ort and at	Improved of approach.	or validated technical
Identify and ameliorate risks of the project.	<ol> <li>Review the SDP work breal structure (WBS), cost and sche</li> <li>Review PMI performance.</li> <li>Propose modifications to th WBS, cost and schedule. Obta approval from the SAS PM.</li> <li>Document and plan remedi known and anticipated risk and problems and weaknesses.</li> </ol>	edule. e revised ain ation of	1 and 2 at the 3 Within the te 4 In the SDP r	est report.	•	delineation of duties ment of cost and

#### Alpha Test and Evaluation

Figure 1 Alpha Test and Evaluation Overview

#### 1. Purpose

An Alpha test is an evaluation of the performance measurements of a well-functioning software code in the middle stages of development. This level of testing is used to assess progress and, if necessary, set a course correction. The test should expose errors for amelioration and demonstrate capabilities. The test serves as a reality check where "friendly parties" who serve as testers also provide important feedback concerning the usefulness of the planned and current capabilities of the code. Alpha test reviews serve as critical milestones for CHSSI. The results of these reviews have major consequences, determining the continuation, modification, or termination of projects or portfolios. As such, Project Principal Investigators and CTA/Portfolio Leaders should place a high priority on preparation for these reviews.

#### 2. Evaluator

- a. Tester: One or more "friendly parties," subject matter experts (SMEs) utilizing user-type data/scenarios, rather than that of the developer, will test the code. These SMEs are the Alpha version testers and although they are "friendly parties." They are not members of the development team nor do they have a vested interest in the outcomes of the tests. The CTA/Portfolio Leader will approve the Alpha SME(s). The Alpha SME will prepare a formal Alpha Test Report and presentation for the CTA/Portfolio Leader's consideration.
- b. Evaluator: The CTA/Portfolio Leader will examine Alpha test performance and other programmatic issues and provide an evaluation report along with attachments to the SAS PM.
- c. Decision Authority: The SAS PM, in consultation with the CTA/Portfolio Leader, will be the decision authority concerning the project's continued funding.

#### 3. Method

Alpha test and evaluation consists of a test event, a test report, an evaluation, an evaluation report, and (if deemed necessary by the SAS PM) a formal review.

a. Test Event: The Alpha test event methodology should include formal compliance with the Alpha test plan. Because user data/scenarios will be used and "real" users will take part in this test event, it is especially important that the Project Principal Investigator and the CTA/Portfolio Leader ensure that the systems and data/scenarios fully test the project's Alpha-level CTPs.

The CTA/Portfolio Leader, in consultation with the Project Principal Investigator, Alpha SME and the SAS PM, will schedule the Alpha test event.

The **Alpha SME** should meet with the software development team in order to use the software, review test results, and examine software development practices. The reviewer shall:

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- Review test results: The Alpha SME is not required to perform (or witness) all reported performance runs, but should validate the reasonableness of the reported results for all platforms. For example, he/she should verify portability on all platforms targeted in the test plan, run several of the test cases, perform a few of the performance runs, review the validation scripts and output files, and prepare and run a few *ad hoc* test scenarios.
- Review software source code, revision control system, and error tracking system. The Alpha SME should examine the source code to verify, to a reasonable degree, that the code functions as described in the technical description contained within the Software Development Plan, and the software's technical documentation. The error tracking system (or process) should be observed and tested and the revision control system should be tested and assessed. Also, the software builds should be performed on the targeted platforms.
- Examine software documentation: The reviewer should examine the user's manual and installation documentation. The user's manual should adequately describe the technical foundations of the software and describe the software's operation. Installation instructions should be clear enough so that a person with moderate expertise can install the software.
- Examine project management activities and processes: The reviewer should examine the performance of the Project Principal Investigator and the development team *vis-à-vis* the Project Management Indicators listed on the Alpha Report template (and explained at Appendix A of the test guidance).

Although not mandatory, we recommend that the CTA/Portfolio Leader personally witness the test event when possible.

- b. Test Report: After reviewing the software development effort, the Alpha SME will provide a written assessment of the software to the CTA/Portfolio Leader. The assessment answers the question "Is the software mature or robust enough to release to a group of external users?" The assessment will be in the form of a formal written report of the test conduct and outcomes in accordance with the format and instructions linked at the end of this document. He/she should coordinate the report with the Project Principal Investigator and CTA/Portfolio Leader as necessary to resolve questions, only. The Alpha SME should sign and date this document.
  - The CTA/Portfolio Leader should ensure that the Alpha SME's test report is completed in accordance with the SAS PM test and evaluation guidance.
- c. Alpha Evaluation: The CTA/Portfolio Leader will examine the Alpha-level technical performance and the programmatic performance for the project. As a minimum, he/she should examine the Alpha SME's test report, other cogent documentation and primary source data. The examination should also include a presentation by and

discussion with the Alpha SME and the Project Principal Investigator. The CTA/Portfolio Leader should examine all of the areas outlined in the Alpha Test Overview Figure 1 and should examine the Project Principal Investigator's performance and plans to accomplish the PMIs highlighted below. Specific guidance concerning the CTA/Portfolio Leader's Alpha evaluation is linked at the end of this document.

Table 1 Project Management Indicators Associated with Alpha Test and Evaluation

		oject Management Indicators Associated with Alpha Test and Evaluation
PMI		Project Principal Investigator
1-1	-	Prepares, reviews, updates, and refines project documentation in accordance with
		guidelines and lessons learned.
	-	Maintains document version control to ensure all changes are tracked and justified.
1-2	-	Prepares, reviews, updates, and refines the SDP in accordance with guidelines and
		lessons learned.
	-	Ensures the development team is fully aware of and consults the SDP.
	-	Uses the SDP as a working document and frequently reviews it with team
		members for compliance, planning, and recommended refinements.
	-	Provides a formally reviewed edition of the plan to the CTA/Portfolio Leader at
	<u> </u>	least annually.
1-3	-	Complies with (milestones, financial data and metrics) reporting requirements.
1-4	-	Manages team performance and communication.
	-	Reviews, refines and updates the WBS when reviewing the SDP.
1-5	-	Monitors development team progress and takes remedial action as necessary.
	-	Ensures compliance with SDP and associated contracts.
	-	Provides progress and remediation reports to the CTA/Portfolio Leader as
		required.
2-1	-	Solicits (user) requirements and input as appropriate.
	-	Provides timely feedback.
2-2	-	Manages error identification, fix and testing procedures and oversees compliance.
	-	Establishes systematic procedures to keep the team and users aware of same.
	-	Maintains good software development practices after initial development.
	-	Promulgates fixes as appropriate.
2-3	-	Establishes regular meetings with the development team to review requirements,
		schedules and progress and to identify problems.
2 1	-	Regularly briefs CTA/Portfolio Leader and management chain.
3-1	-	Prepares, refines, and updates manuals.
	-	Develops, publishes, and keeps current a lessons learned repository.
	-	Solicits and incorporates recommended changes and improvements.
	-	Provides authorized users with necessary documentation and scripts as well as
	<u> </u>	appropriate portions of the lessons learned repository.

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PMI	Project Principal Investigator
3-3	<ul> <li>Works with supervisor, local security personnel, and the CTA/Portfolio Leader to determine and enforce export control and security restrictions early development process and validates such restrictions as the software capability develops and export control and security guidance changes.</li> <li>Ensures hosting shared resource center systems administration staff are aware of restrictions to the code and affiliated data.</li> </ul>
3-4	<ul> <li>Provides current documentation to the CTA/Portfolio Leader as significant changes develop or after several nominal changes are made to the documentation and code.</li> <li>Promulgates fixes as appropriate.</li> </ul>

- d. Evaluation Report: The CTA/Portfolio Leader will prepare a formal evaluation report in accordance with the format and instructions linked at the end of this document.
- e. Alpha Review: The SAS PM will determine whether there is a need for a formal Alpha review after receipt of the CTA/Portfolio Leader's Evaluation Report and attachments. Instructions for the Alpha review and the documentation/materials listing are linked at the end of this document.

If the SAS PM determines that an Alpha review is required he/she will notify the CTA/Portfolio Leader who will coordinate presentation materials and other documentation with the Project Principal Investigator and the Alpha SME. The CTA/Portfolio Leader, Project Principal Investigator and Alpha SME will prepare for, attend, brief the SAS PM, participate in discussions, and respond to questions at the Alpha review.

4. Time Line and Responsibilities: **Please note** that the time line is fragmented into fourteen steps to show actions required before, during, and after the <u>test</u> and the <u>review</u>.

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Table 2 Alpha Time Line and Responsibilities

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 1 No less than 12 weeks before the Alpha test event(s)	<ul> <li>Recommend potential Alpha tester(s) to the CTA/Portfolio Leader. Provide qualifications/ resumes with nomination.</li> <li>Meet with the Alpha SMEs selected by the CTA/Portfolio Leader to brief the project's goals and Alpha-level CTPs.</li> <li>Review the proposed test data/scenarios to ensure they can be used to fully test Alpha-level CTPs. Coordinate with the Alpha SME to expand or otherwise modify the data/scenarios as necessary.</li> </ul>	<ul> <li>Select Alpha SME(s) and notify the Project Principal Investigator and Alpha SME(s) of selection.</li> <li>Discuss the proposed test data/scenarios with the Project Principal Investigator to ensure they can be used to fully test Alpha-level CTPs.</li> </ul>	<ul> <li>Agree to be nominated and commit to serving if approved.</li> <li>Meet with the Project Principal Investigator to receive a briefing concerning the project's goals and Alpha-level CTPs.</li> <li>Devise "Real world" data/scenarios for the test.</li> <li>Submit the data/scenarios to the Project Principal Investigator and the CTA/Portfolio Leader for review/approval.</li> </ul>	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 2 No less than 10 weeks before the Alpha test event(s)	<ul> <li>Write the Alpha test plan and review it with the CTA/Portfolio Leader and the Alpha SME.</li> <li>Ensure code and documentation are ready for Alpha testing.</li> <li>Discuss Alpha test schedule with CTA/ Portfolio Leader, development team, and the Alpha SME.</li> <li>Submit test plan to CTA/Portfolio Leader.</li> </ul>	<ul> <li>Coordinate test schedule with Project Principal Investigator, Alpha SME, and invite SAS PM to the test event.</li> <li>Provide Alpha SME with current CHSSI test guidance. Discuss requirements for formal test report, evaluation and Alpha review.</li> <li>Reinforce requirements for evaluation and Alpha review with Project Principal Investigator.</li> <li>Review and validate test plan.</li> <li>Forward validated test plan to SAS PM for approval.</li> </ul>	<ul> <li>Ensure         data/scenarios are         ready for Alpha         testing.</li> <li>Provide the         Project Principal         Investigator with         copies of         data/scenarios for         dry runs.</li> <li>Review and         comment upon         draft test plan.</li> </ul>	<ul> <li>Review test plan and notify CTA/ Portfolio Leader of deficiencies or approval.</li> <li>Accept invitation to the test event or provide regrets.</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 3 No less than 8 weeks before Alpha test event(s)	<ul> <li>Follow-up/complete open actions.</li> <li>Take remedial actions necessary to obtain test plan approval.</li> <li>Provide the proposal, the current approved SDP, installation and user manuals, and approved Alpha test plan to the CTA/Portfolio Leader and the Alpha SME.</li> <li>Coordinate with the appropriate shared resource center staff to ensure support for software testing. Pay particular attention to the processor availability to ensure that the CTPs can be correctly tested.</li> <li>Provide code and installation manual to appropriate shared resource center staff.</li> <li>Perform dry runs on the approved test plan using the systems where Alpha testing will occur.</li> <li>Coordinate with the CTA/Portfolio Leader to resolve any systems availability problems.</li> <li>Coordinate the logistics of the test, including the Alpha SME's system access as necessary.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Coordinate with Project Principal Investigator concerning SAS PM test plan decision and supervise remedial action as necessary.</li> <li>Monitor test coordination and progress; assist the Project Principal Investigator in ensuring appropriate shared resource center support (e.g., HPC system availability, testing allocations, etc.) and Alpha SME access.</li> <li>Provide electronic (MS Office compatible) copy of the Alpha test plan to SAS PM.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Verify system access as necessary.</li> <li>Perform dry runs with the approved test plan using the systems where Alpha testing will occur.</li> <li>Provide feedback as appropriate to the CTA/Portfolio Leader and Project Principal Investigator.</li> </ul>	- Follow- up/complete open actions.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 4 No less than 5 weeks before Alpha test event(s)	<ul> <li>Follow-up/complete open actions.</li> <li>Confirm Alpha test day and time with CTA/Portfolio Leader and Alpha SME.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Monitor test coordination and Alpha test preparation progress.</li> <li>Assist in resolving questions and coordination problems.</li> <li>Confirm test schedule with Project Principal Investigator, Alpha SME, and SAS PM.</li> <li>Ensure any necessary funding is in place for Alpha SME test and review travel.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Confirm test schedule with Project Principal Investigator and CTA/Portfolio Leader.</li> <li>Examine software source code, revision control system, error tracking system and installation and user manuals.</li> <li>Take notes of strengths and deficiencies noted.</li> </ul>	- Follow- up/complete open actions.
Step 5 No less than 2 weeks before Alpha test event(s)	- Follow-up/complete open actions.	<ul> <li>Follow-up/complete open actions.</li> <li>Monitor test preparations.</li> <li>Ensure that the Alpha SME understands how to properly prepare the Alpha Test Report.</li> </ul>	- Follow- up/complete open actions.	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 6 Alpha Test	<ul> <li>Assist the Alpha SME as requested.</li> <li>Witness the Alpha test.</li> <li>Discuss requirements, documentation and performance with the Alpha SME.</li> <li>Take notes of discussion items and deficiencies noted.</li> </ul>	<ul> <li>Witness the Alpha test if feasible.</li> <li>Discuss user requirements, documentation and performance with the Alpha SME.</li> <li>Discuss PMI performance with the Project Principal Investigator.</li> <li>Interview selected Alpha users.</li> <li>Provide oral feedback to Project Principal Investigator and development team.</li> <li>Coordinate date and venue for the evaluation meeting with Alpha SME and Project Principal Investigator.</li> <li>Discuss, with Alpha SME and Project Principal Investigator, presentation materials, documentation, and data required for the evaluation meeting.</li> <li>Develop notes of test conduct, test results, and discussion.</li> </ul>	<ul> <li>Conduct the Alpha test.</li> <li>Discuss requirements, documentation and performance with the CTA/Portfolio Leader and the Project Principal Investigator.</li> <li>Take notes of discussion items and deficiencies noted.</li> <li>Obtain electronic copies of data required for the subsequent evaluation meeting (test performance data for the required matrix, test results, etc).</li> <li>Provide oral feedback to Project Principal Investigator and the CTA/Portfolio Leader.</li> </ul>	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 7 Within 2 weeks after Alpha test event(s)	<ul> <li>Develop lessons learned for future test conduct.</li> <li>Take action in accordance with Alpha SME's oral feedback.</li> <li>Follow-up/complete open actions.</li> <li>Prepare project overview and programmatic portions of Alpha evaluation presentation materials and forward them to the CTA/Portfolio leader.</li> </ul>	<ul> <li>Review and comment upon the Alpha SME's report and data.</li> <li>Forward comments to the Project Principal Investigator and Alpha SME.</li> <li>Complete coordination for the evaluation meeting.</li> </ul>	<ul> <li>Write assessment.</li> <li>Provide the formal test report with attachments and presentation materials to the CTA/Portfolio Leader.</li> </ul>	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 8 No more than 4 weeks after Alpha test event(s)  CTA/Portfolio Leader's Evaluation Meeting	<ul> <li>Participate in the evaluation meeting.</li> <li>Document discussion and lessons learned.</li> <li>Take action in accordance with the CTA/Portfolio Leader's evaluation report.</li> </ul>	<ul> <li>Conduct the evaluation meeting.</li> <li>Write the evaluation report which comments upon the Alpha SME's report and provides an evaluation of the project team's PMI performance and other pertinent data. Include exit criteria and remedial actions and suspense schedule (if necessary).</li> <li>Prepare CTA/Portfolio Leader's portion of Alpha review presentation.</li> <li>Provide a formal written evaluation report (with attachments) to the SAS PM with a copy to the Project Principal Investigator and Alpha SME (with required attachments).</li> <li>Obtain feedback from the SAS PM concerning the need for an Alpha review.</li> </ul>	<ul> <li>Participate in the evaluation meeting.</li> <li>Review the CTA/Portfolio Leader's evaluation report.</li> </ul>	<ul> <li>Review         evaluation         report and         associated         materials.</li> <li>Determine the         need for an         Alpha review         and notify         CTA/Portfolio         Leader of         decision.</li> <li>Schedule date,         time and         location of the         Alpha review,         if deemed         necessary.</li> <li>Respond to the         test report and         CTA/Portfolio         Leader's         comments as         appropriate</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 9 No less than 3 weeks before Alpha Review	<ul> <li>Follow-up/complete open actions.</li> <li>Prepare for Alpha Review.</li> <li>Revise as necessary and finalize presentation materials.</li> <li>Forward revised presentation materials and any additional or revised attachments to the CTA/Portfolio Leader.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Review and comment upon Project Principal Investigator and Alpha SME presentation materials. Require revisions as appropriate.</li> <li>Forward final presentation materials and any additional or revised attachments to the SAS PM.</li> </ul>	- Review CTA/Portfolio Leader's comments Revise as necessary and finalize presentation materials Forward revised presentation materials and any additional or revised attachments to the CTA/Portfolio Leader.	- Not applicable.
Step 10 No less than 2 weeks before Alpha Review	<ul><li>Follow-up/complete open actions.</li><li>Prepare for Alpha Review.</li></ul>	<ul><li>Follow-up/complete open actions.</li><li>Prepare for Alpha Review.</li></ul>	<ul> <li>Follow- up/complete open actions.</li> <li>Prepare for Alpha Review.</li> </ul>	- Read Alpha review package.
Step 11 No less than 1 week before Alpha Review	- Follow-up/complete open actions.	- Follow-up/complete open actions.	- Follow- up/complete open actions.	- Consult documentation and presentation materials prior to the review.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	Alpha SME	SAS PM
Step 12 Alpha Review	<ul> <li>Attend Alpha Review.</li> <li>Brief project overview.</li> <li>Brief programmatic issues.</li> <li>Respond to questions.</li> </ul>	<ul><li>Attend Alpha Review.</li><li>Brief PMIs.</li></ul>	<ul> <li>Attend Alpha Review.</li> <li>Brief test results and user requirements feedback.</li> <li>Respond to questions.</li> </ul>	<ul><li>Conduct Alpha Review.</li><li>Provide oral feedback.</li></ul>
Step 13  No more than  2 weeks  after Alpha  Review	- Take action in accordance with SAS PM's comments.	- Take action in accordance with SAS PM's comments.	- Follow- up/complete open actions.	- Provide formal decision and exit criteria with suspense dates (if appropriate).
Step 14 No more than 3 weeks after Alpha Review	- Take action in accordance with SAS PM's decision.	- Take action in accordance with SAS PM's decision.	- Not applicable.	- Not applicable.

5. Instructions and Document Formats: Instructions and document formats are linked below:

Document/Item	Intro	Alpha	APP A	APP B	APP C	APP D
Introduction	PDF					
Test Guidance		PDF				
Test Plan Guidance		PDF				
Test Plan Template		DOC				
Test Report Guidance		PDF				
Test Report Template		DOC				
Evaluation Guidance		PDF				
Evaluation Report Guidance		PDF				
Evaluation Report Template		DOC				
Review Guidance		PDF				
CHSSI Metrics			PDF		_	
Abbreviations and Acronyms				PDF		
Prototypical Test Results Matrix					XLS	
Prototypical Review Briefing Template						PPT